

## SECTION 6 - CONTROLLER CABINET

### 8.6.1 334 CABINET

- 8.6.1.1 The Controller Cabinet shall comply with the Transportation Electrical Equipment Specifications (TEES), Chapter 1, dated May 1996; and the TSCES, Model 334 Cabinet Specifications (Chapter 6) with the following amendments:
- 8.6.1.2 Amend Specification 6.1.1.3 "Model 334 Cabinet (Ramp Meter)" to read "Model 334C Cabinet (TMS)".
- 8.6.1.3 Amend Input Panel #3 detail in TSCES-9 plan sheet with the details in Appendix A called "Model 334C Cabinet, Input File No. 3--Upper Part" and "Model 334C Cabinet, Input File No. 3--Lower Part".
- 8.6.1.4 At the Contractor's Option, DIN Terminal Block conforming to TB1 Block type may be provided in lieu of TB2 to TB6 Terminal Blocks and EG Buses. The terminal position requirements shall match Input Panel #3 needs. EG Segments shall be located between Detector connection segments for field cable shield grounding. The DIN Railing shall be located vertical, centered on the panel. Spade Lugs are not required with this option.
- 8.6.1.5 Amend "Model 208 Monitor Unit Pin Assignment" detail in TSCES-4 plan sheet as follows:

#### MODEL 208 MONITOR UNIT PIN ASSIGNMENT

PIN	FUNCTION
1/44	DC Ground
2/43	WDT Ext. Reset
5/40	WDT IN
10/35	+24 VDC
15/30	AC-
17/28	Normally Open, Circ. #2
19/26	AC+
20/25	Normally Closed, Circ. #1
21/24	Circ. Common #1 & #2
22/23	WDT Lamp (External)

#### NOTE:

Card connector keyed between pins 2 & 3, and pins 11 & 12.

### 8.6.2 LIGHT LEVEL CONTROL SYSTEM

## 8.6.2.1 GENERAL REQUIREMENTS

- 8.6.2.1.1 The Light Level Control System shall consist of the Photo electric sensor, the incoming AC power line sense, the comparator / controller report circuitry and the Dimmer Control Circuitry all resident in the CIA Unit. The system shall sense the background ambient light level (range 0 to 5 Volts) and provide sense levels to the controller via the 8 Sense Lines. The AC Line shall be sensed between 75 to 150 VAC and reported back to the controller via sense lines. The Dimmer Control Circuit shall read the three Dim Level select lines from the controller and control the Triac Turn On Point.
- 8.6.2.1.2 Background ambient light levels for pixel dimming and background light sensing shall be adjusted and pre-set at the factory prior to delivery to the STATE. Potentiometer settings shall match each light level setting designated by number from level 1 to 7, where level 1 is lowest light level and level 7 is highest (brightest) light level.

## 8.6.2.2 FEATURE REQUIREMENTS

- 8.6.2.2.1 Background Light Sensing Circuitry
  - 8.6.2.2.1.1 A commercially available photo-electric sensor in a EEI-NEMA type twist lock receptacle or equal, metal enclosure shall be installed on the Controller Cabinet, where the sensor shall not be affected by artificial lighting.
  - 8.6.2.2.1.2 The photo-electric sensor shall be a EG and G VACTEC Type VT521H or equal.
  - 8.6.2.2.1.3 The photo-electric sensor shall be capable of being continually exposed to direct sunlight without impairment of its performance.
  - 8.6.2.2.1.4 The watertight metal enclosure shall have a 1.00 square inch glass window area to assure full exposure of photocell to ambient light.
  - 8.6.2.2.1.5 The Photo- electric sensor output lines shall be routed to Cabinet Terminal Block TB1 and via C10 to the CIA. The outputs shall be electrical compatible with the CIA Input circuitry.
- 8.6.2.3 Pixel Dimming Circuitry - CIA
  - 8.6.2.3.1 The pixel dimming circuit shall allow the AC power to be switched at any point from 10 degrees to 120 degrees and from 190 degrees to 300 degrees for each pixel intensity.
  - 8.6.2.3.2 Each pixel intensity sine wave switch point shall vary 5 degrees (maximum) when the dimming circuit is exposed to temperature changes ranging from +25° C to +65° C and from +25° C to -30° C.

- 8.6.2.3.3 Each pixel intensity shall be adjusted by a discrete wirewound 10-turn potentiometer. Each potentiometer shall use 90% (maximum) of its adjustment range throughout the sine wave switching range specified.
- 8.6.2.3.4 The pixel dimming circuit shall read 3 Dimmer Level inputs (read in binary, Line 1 least significant), from the controller to select the 8 set conditions of dim control for the CMS (Selection "0" shall allow no Dim Control output or BLANK Sign).
- 8.6.2.3.5 The pixel dimming circuit shall have electrical devices installed to minimize 60 Hz noise on the AC load lines.
  - 8.6.2.3.5.1 Each noise eliminator shall cause the slope of the switch-on across the pixels to rise at between 8V per degree and 20V per degree across the AC voltage sine wave.
  - 8.6.2.3.5.2 Each noise eliminator shall eliminate overshoot across the AC voltage sine wave when the pixel load voltage reaches its maximum.
- 8.6.2.4 The DIM Control Line shall control all 60 PDM Triac Turn On Points. The DIM Control Circuitry shall relay back to the Controller a Phase Fire Pulse of 200 us nominal indicating Triac Turn On pulse. The DIM Control shall, also, provide Soft Start Feature. Soft Start shall use the DIM Control line to reduce in rush current at pixel turn on or message change. Soft Start shall have a six AC cycle minimum step between 160 deg to 10 deg and 340 deg to 190 deg.